

Appl. No. : 10/619,796  
Filed : July 15, 2003

## REMARKS

The foregoing amendments are responsive to the Office Action dated May 22, 2009. Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and the following remarks.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

### Response to Rejection of Claims 9-14, 17-20, 26 and 40-44 Under 35 U.S.C. 112 Second Paragraph

The Examiner rejected Claims 9-14, 17-20, 26 and 40-44 under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant notes that in Sections 3-1 through 3-8 the claims rejected by the Examiner do not correspond to those listed in the header, Section 3. For example, Section 3-5 rejected Claim 22 not listed above and Claim 26 listed above is not currently pending as it was previously cancelled. Applicant responds below to the rejections given in Sections 3-1 through 3-8.

Regarding Claim 9 and Claims 10-14 depending on it, Claim 9 has been amended to clarify the antecedent basis issues identified by the Examiner regarding “said more than one substantially sparse block” and regarding “said sub-blocks.”

Regarding Claim 13, Claim 9 has been amended to clarify the antecedent basis issues identified by the Examiner regarding “said sub-blocks.”

Regarding Claims 19 and 20, Claim 18 has been amended to clarify the antecedent basis issues identified by the Examiner regarding “said matrix of disturbances.”

Regarding Claim 22, Claim 22 has been amended to clarify the antecedent basis issues identified by the Examiner regarding “said system of equations”, “said transformed system of equations”, and the issue of compression.

Regarding Claim 23, Claim 23 has been amended to clarify the antecedent basis issues identified by the Examiner regarding “said interaction data”.

Claim 32 has been cancelled.

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Response to Rejection of Claims 9-14, 17-24, 26 and 30-44 Under 35 U.S.C. 101

The Examiner rejected Claims 9-14, 17-24, 26 and 30-44 under 35 U.S.C. 101 because the invention disclosed in the claims is directed to non-statutory subject matter. Applicant notes that Claim 26 has previously been cancelled.

First Issue:

On Page 7 lines 16-18 of the Office Action of May 22, 2009 the Examiner states, "...and thus, is nonstatutory because the manipulation on abstractions (e.g., fictitious sources) just cannot produce a tangible result."

In this same Office Action, on Page 10 lines 8-10, the Examiner quotes from Applicant's previous argument, "...'Numerous embodiments within the specification describe how to use fictitious sources to compute real physical effects.' (Page 10, paragraph 2, Amendment.)"

Examiner's statement appears to be central to Examiner's Section 101 rejection in this and prior office actions. In Applicant's response to the prior Office Action (that of March 5, 2009) Applicant responded to the same statement and explained how they do produce a tangible result, but cannot find an explanation of Examiner's reason for disputing this in the current office action. Applicant respectfully requests Examiner to clarify his reasoning as to why he states that fictitious sources just cannot produce a tangible result. Applicant's previous argument is summarized below.

It is well known to those having ordinary skill in the art how to use fictitious sources to produce real physical effects. This is stated, for example, on Page 8, lines 8-17 of the specification. For further clarity, Applicant presents one embodiment (out of many possible) that uses fictitious sources to compute a real physical effect.

Figure 10 of the Application provides a flowchart for an embodiment where step (1009) computes an exciting electric field "E" and step (1016) computes resulting sources "J". The Application states on Page 8, lines 14-16 regarding sources such as "J", "...it is known how to mathematically relate electric currents to equivalent magnetic currents to produce the same electromagnetic waves."

For example, a physicist might say that when an exciting electric field hits an object, electrons flow in that object, and those moving electrons result in a scattered (real) electromagnetic wave. However, the (real) scattered electromagnetic field may be computed from the exciting electric field with or without computing the moving electrons as an

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intermediate step. For example, sometimes magnetic currents (fictitious sources) are used in an intermediate step. Thus, Applicant asserts that contrary to Examiner's statement, fictitious sources (e.g., magnetic currents) can produce a real physical, tangible result, and that this is known to those having ordinary skill in the art and is described in the Specification.

Second Issue:

The Examiner states in the Office Action of May 22, 2009 that "physical effect" has not been "specifically defined" in the specification, and continues on Page 11, lines 8-9, "In view of the specification, the 'physical effect' will be further interpreted as the 'effect of all types of actual and/or fictitious sources.'" Applicant understands Examiner's position to be that if an electric field is the physical effect created, then the term electric field has been broadened to mean anything and everything that could be produced by "all types of actual and/or fictitious sources." However, the terms electric field and physical effect have a clear meaning to those of ordinary skill in the art even without being described in the Specification. Furthermore, as discussed in the "first issue" above, the specification gives no reason to broaden their meaning. Thus, Applicant asserts that Examiner's interpretation of the meaning of "physical effect" and associated terms such as electric field is contrary to the Specification and that these terms retain their ordinary meaning as used by persons having ordinary skill in the art.

Practical Result:

All of the claims describe produce a description of a real physical quantity. As described under "second issue" above nothing in the specification broadens the meaning of terms such as electric field, etc., beyond their standard well known meaning. Thus all of the claims produce a practical useful concrete and tangible result. In addition, the claims provide practical results of allowing a computer to use less memory due to data compression, which is an additional practical useful concrete and tangible result.

Non-Preemption:

The present claims are directed to creating composite sources and to using them to make a computer perform efficient computations to describe physical phenomena. The following is an example of a substantial use of creating composite sources that is not preempted by the present claims. For example, composite sources could be created on a computer and their properties could be output, without using the composite sources to efficiently determine a description of a

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physical phenomena. In this example these sources would not be used for either data compression or for computing a physical phenomena due to these sources. Outputting specific properties of composite sources has substantial uses. For example, a person could use that information to, for instance, understand how much compression is possible and from that infer information about related physical effects.

Machine or Transformation Test:

All of the Process (or Method) claims require the use of a particular computer. The remaining claims are device claims that are machine implemented. The computer used is a particular computer because of how it is configured for more efficient operation (e.g., compression) and because of the non preemption as discussed above. Thus, the machine test is satisfied.

All of the claims transform electronic data representative of real physical quantities, and thus they also pass the transformation test.

Summary

Applicant respectfully assert that Claims 9-14, 17-24, 30-31 and 33-44 are allowable over the prior art, and Applicant request allowance of Claims 9-14, 17-24, 30-31 and 33-44. If there are any remaining issues that can be resolved by a telephone conference, the Examiner is invited to call the undersigned attorney at (949) 721-6305 or at the number listed below.

Respectfully submitted,

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Dated: September 22, 2009

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